Freezing at the Equator

by Lt. Blake K. Michaelson

We had just crossed the equator at the international dateline (read: Golden Shellback) and the weather was hot and humid, with big puffy clouds everywhere. We had some pretty big buildups during the day, CBs up to 18,000-20,000 feet, but it was easy to pick our way through them. As a nugget in my first month of a WestPac cruise, I was renewing my night currency and flying my second blue-water hop of the day. The nearest chunk of land, an uninhabited rock, was more than 400 miles away.

We briefed and manned-up with no hitches. I was in aircraft 602 for the second time, having flown it earlier in the day with no major front-end gripes. It was a typical black night, meaning no moonlight, no horizon, and no NVGs. I vividly remember thinking, "How in the hell are we going to pick our way through the clouds? Oh well, I guess we'll just press through them. It might get a bit bumpy, but we'll get on top and be OK."

We then were shot into the blackness. We tooled out to 12 miles at 1,000 feet and began to climb. I'd under-rotated off the cat shot, prompting some special attention from my skipper. I was cautious, since we were IFR, and dedicated my scan entirely inside. I slowed down so we could let out the HF trailing wire, going to on-speed in the climb. As we were climbing through 16,000 feet, I made a turn to our first stationing fix, right into a big puffy cloud. My skipper questioned this but advised me to maintain my current heading, stating, "We'll be on top soon enough."

Two to three minutes later, passing through 20,000 feet, we got a master caution light indicating that we had a pitch-feel problem. This controllability problem occurs when two key cross-checked airspeeds differ by 25 knots. I took a look at my airspeed and saw it pass through 80 knots and then to zero! I leveled off and told my skipper about the airspeed indication. His airspeed looked OK. A quick check of groundspeed led us to believe his airspeed indicator was accurate. We leveled off and turned, trying to get out of the cloud. The skipper double-checked our switches

and circuit breakers. All were positioned correctly. The OAT was about minus 18 degrees Celsius.

My skipper took out his grimes light to check for exterior ice and found the entire side bubble window (which was unheated) covered with mixed rime-ice. Moving his light to the windscreen revealed a solid covering of ice on the windshield wipers. He couldn't see the pitot tubes or wings with his light and, taking the controls, asked me to check them. I pulled my white flashlight off my SV-2 and discovered the front of both tubes were covered by a half inch of ice. It looked like they were covered with large iron filings, and the wings were impossible to see with my flashlight. At this point, the skipper called for the engine anti-ice. We decided to descend in a temporary clearing but found ourselves boxed into clouds again. We climbed back up to 21,000 feet to get a better look and found a ridge we could successfully clear. We dropped down below the briefed freezing level of 14,000 feet, but our pitot system still wasn't working. We descended through 10,000 feet and reached an OAT of 20 degrees Celsius. The pitot system came alive, and I checked for ice again. It appeared to be gone.

We were hesitant to continue our mission, placing no trust in an unreliable pitot-static system, so we asked strike to come down with the recovery in progress. We did a little Hummer dance and arrived to a bullseye-only approach, getting ACLS needles at about 1.5 miles.

Maintenance found the heating element in each of the two pitot tubes had burnt out. Although it is not uncommon for a single pitot tube to burn out its heating element, our senior maintainers never had seen both fail simultaneously.

So, what did I get out of this besides an upgrade on my pass for degraded instrumentation conditions? First, just because it's boiling on the flight deck doesn't mean you're not going to encounter icing at altitude. We decided we were in perfect weather conditions to encounter such a problem. Had we discussed icing in our brief, we might not have had this problem. Second, keep an inside and outside scan. Third, if you are above freezing level and possibly entering visible moisture, anticipate the need for engine anti-ice and use it. Fourth, we could have used our taxi light to identify visible moisture; we didn't and should have. Fifth, if you can think of any components to add to our aircraft, recommend changes. If we always do what we've always done, we'll always get what we've always gotten. I'll be investigating obtaining NVGs for our squadron, and looking at weather-radar options and icing lights for the Hummer. Finally, air conditioning doesn't work well on a conventional carrier. Never take the stateroom that "has had some modifications made to it so it won't be the 'Hot Box' that it was last cruise."

Lt. Michaelson flies with VAW-116.